



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/748,930      | 12/30/2003  | Angel Stoyanov       | 25277               | 1937             |

28624 7590 01/06/2009  
WEYERHAEUSER COMPANY  
INTELLECTUAL PROPERTY DEPT., CH 1J27  
P.O. BOX 9777  
FEDERAL WAY, WA 98063

|          |
|----------|
| EXAMINER |
|----------|

CORDRAY, DENNIS R

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1791

|                   |               |
|-------------------|---------------|
| NOTIFICATION DATE | DELIVERY MODE |
|-------------------|---------------|

01/06/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@weyerhaeuser.com

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/748,930 | <b>Applicant(s)</b><br>STOYANOV ET AL. |  |
|                              | <b>Examiner</b><br>DENNIS CORDRAY    | <b>Art Unit</b><br>1791                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-16,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-16,19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/3/2008 has been entered. Claim 1 is amended.

### ***Terminal Disclaimer***

The terminal disclaimer filed on 10/26/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Application No. 10/748977 will be acknowledged. Upon its review and acceptance, the Double Patenting rejection over pending U.S. Application No. 10/748977 will be withdrawn.

### ***Response to Arguments***

Applicant's arguments, see p 4, filed 11/3/2008, regarding the rejection of Claim 1 under 35 U.S.C. 112, 1<sup>st</sup> par with respect to the temperature limit of 185°C have been fully considered and are persuasive. In the cited case law, the description in a related application of a range of 25-60% along with specific embodiments of 36% (which is very

Art Unit: 1791

close to the claimed 35%) and 50% were judged sufficient evidence that persons skilled in the art would consider a range of 35-60% to be part of the invention. In the instant case, a crosslinking temperature of slightly greater than 182 °C is used in examples. The difference between 182 °C and the claimed 185 °C is very small (less than 2%) and one of ordinary skill in the art would not have expected significantly different results from crosslinking at 185 °C.

The upper limit of polyol of about 2.6% is within the broadly disclosed range of about 1% to about 10%, but is 30% above or below the nearest exemplified values of 2 and 4. There is nothing in the Specification or data that reveals any unobvious advantages when using this very specific value or that would lead one of ordinary skill in the art to use the specific value over a value outside of the claimed range. The rejection of Claim 1 under 35 U.S.C. 112 is maintained with regard to the upper percentage limit of 2.6% for polyol.

The arguments against the cited prior art are not convincing. Applicant argues that Hansen et al would teach one to probably consider “about 180 °C” to be a warning to approach 180 °C with caution and not go beyond that point. Hansen et al teaches “about 180 °C” as an upper limit and recites in a specific example that a temperature between 140 °C to 180 °C was used. Hansen et al also discloses that the curing temperature depends on the type of crosslinking agent used (col 45, lines 12-14). As discussed in the previous response to arguments, Cook et al teaches that the relationship between time and temperature during crosslinking of cellulosic fibers is well known in the art (col 13, lines 32-49). Cook et al also teaches that temperatures up to

Art Unit: 1791

225 °C can be used with an appropriate exposure time without darkening or damaging fibers. Cook et al used C<sub>2</sub>-C<sub>9</sub> polycarboxylic acid as crosslinking agents, with citric acid preferred (Abs). Thus, one of ordinary skill in the art having the general knowledge of the time-temperature relationship would have found it obvious that the word “about” in the temperature range of Hansen et al can embody a temperature of at least 185 °C.

The rejections over the cited prior art are maintained and, in addition, new grounds of rejection are made as detailed below.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1, as amended, recites “from about 1% to about 2.6% of the weight of the cellulose fiber of a C<sub>4</sub>-C<sub>12</sub> polyol”. On p 7, last par, the limits of about 1% to about 10% and the limits 2% to about 6% are disclosed. The data in tables 1 to 3 include additive (polyol) in the amounts of 1.5%, 2%, 4%, 6%, 8% and 10% (wt% on fiber). The upper claimed limit of about 2.6% for polyol of is within the broadly disclosed range, but is 30% above or below the nearest exemplified values of 2 and 4. There is

Art Unit: 1791

nothing in the Specification or data that reveals any unobvious advantages when using this very specific value or that would lead one of ordinary skill in the art to choose the specific value over a value outside of the claimed range.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 4, 6, 7, 10-16 and 19-20 are rejected under 35 U.S.C. 103(a) as unpatentable over Hansen et al (5789326).

Hansen et al ('326) discloses crosslinked cellulosic fibers comprising particle binders (Abs; col 45, lines 30-33). Particle binders include  $\alpha$ -hydroxy polycarboxylic acids (citric is recited as an example) and polyols (sorbitol is claimed) (col 46, lines 7-15; Claims 3 and 4). The binders are added in an amount from 1-80% by weight of the fibers, and preferably from 1-25% by weight (col 4, lines 49-53). Thus, the amount of binder present encompasses the claimed amount.

The crosslinking agent can be citric acid (an  $\alpha$ -hydroxy polycarboxylic acid) or any other crosslinking agent known in the art (col 42, line 61 to col 43, line 14 and particularly col 43, line 8). The fibers are cured (crosslinked) within a range of about 140 to about 180 °C (col 45, lines 6-10). The term "about 180 °C" includes values higher than 180 °C and is considered by the Examiner to overlap the claimed temperature of 185 °C and temperatures even higher. One of ordinary skill in the art at

Art Unit: 1791

the time of the invention would “clearly envisage” crosslinking temperatures within the claimed range from the disclosure of Hansen et al.

The particle binders can be added before, after or simultaneously with curing (col 45, line 66 to col 46, line 3). Where the binders can also function as an intrafiber crosslinking agent (e.g.-citric acid), the fibers should contain at least 20% by weight of water, which inhibits ester bond formation and ensures that adequate binder will remain in the fibers to bind the particles to the fibers (col 46, lines 12-29). Thus, in some embodiments, the fibers are crosslinked in the presence of the particle binder that comprises sorbitol.

Hansen ('326) et al does not disclose the wet bulk, Whiteness Index, L value, a-value or b-value of the fibers. The reference discloses all the structural limitations of the claims, cellulosic fibers crosslinked with an  $\alpha$ -hydroxy polycarboxylic acid in the presence of 1 to 80% C<sub>4</sub>-C<sub>12</sub> polyol by weight of the fibers. The crosslinked fibers of Hansen et al are substantially identical to the claimed fibers and will have the claimed wet bulk whiteness and color properties for reasons given in previous Office Actions. Furthermore, the Declaration submitted on 3/17/2008 shows that the fibers made according to Hansen et al ('326) have the same properties as the claimed fibers. Applicant has stated on p 5, item 12 of the Declaration that it is his opinion that the crosslinking reaction with citric acid is not affected by the presence of 20% or 30% by weight water prior to the curing.

Hansen et al ('326) does not disclose the specific acyclic polyols and heterosides of the instant Claims.

Hansen et al ('326) does disclose crosslinked cellulosic fibers comprising particle binders that include sorbitol.

It would have been obvious to one of ordinary skill in the art that the other claimed species of polyol (erythritol, xylitol, arabinitol, ribitol, mannitol, perseitol, volemitol, maltitol, myo-inositol and lactitol), having structures and functionality similar to sorbitol (with varying numbers of carbon atoms and hydroxyl groups on adjacent carbon atoms), would be expected to act similar to sorbitol as a binder. It would thus have been obvious to one of ordinary skill in the art to substitute any of the claimed polyols for sorbitol as a particle binder in the fibers of Hansen et al ('326) as a functionally equivalent option with predictable results.

Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hansen et al (5789326).

Claim 1 is a product-by-process claim. The product of Hansen et al ('326) appears to be the same as or similar to the claimed product, crosslinked cellulosic fibers, although produced by a different process. Furthermore, the Declaration submitted on 3/17/2008 shows that the fibers made according to Hansen et al ('326) have the same properties as the claimed fibers. The burden therefore shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). "In the event any differences can be shown for the product of the product-by-process claim 1 as opposed to the product taught by the reference



Art Unit: 1791

Hansen et al ('326), such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results: see also *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)”

In the event that the instant claims are not found obvious over Hansen et al ('326) alone, the following rejection also applies.

Claims 1, 3, 4, 6, 7, 10-16 and 19-20 are rejected under 35 U.S.C. 103(a) as unpatentable over Hansen et al ('326) in view of Cook et al (5562740).

The disclosure and deficiencies of Hansen et al ('326) are used as above. In particular, Hansen et al ('326) does not explicitly disclose the claimed temperature range. Hansen et al does disclose that the curing temperature depends on the type of crosslinking agent used (col 45, lines 12-14).

Cook et al discloses individualized polycarboxylic acid crosslinked fibers. Cook et al uses C<sub>2</sub>-C<sub>9</sub> polycarboxylic acid as crosslinking agents, with citric acid as a preferred agent(Abs). Cook et al teaches that the relationship between time and temperature during crosslinking of cellulosic fibers is well known in the art (col 13, lines 32-49). For instance, for temperatures from about 145°C to about 165 °C, a curing time between about 30 and about 60 minutes is sufficient; for temperatures from about 170°C to about 190 °C, a time between about 2 and about 20 minutes is used. An upper limit of 225 °C is taught to prevent darkening or damaging of the fibers.

Art Unit: 1791

The art of Hansen et al ('326), Cook et al and the instant invention is analogous as pertaining to individualized crosslinked cellulosic fibers. It would have been obvious to one of ordinary skill to obtain the crosslinked fibers without scorching by curing at the claimed temperatures and adjusting the curing time appropriately in the process of Hansen et al ('326) in view of Cook et al as a functionally equivalent option and to have a reasonable expectation of success.

It would have been obvious to one of ordinary skill in the art to substitute any of the claimed polyols for sorbitol as a particle binder for reasons previously given. It would also have been obvious to obtain the claimed wet bulk, whiteness and color properties for reasons given previously.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as unpatentable over Hansen et al ('326), with or without Cook et al, in view of Smith et al (US 2002/0090511).

Hansen et al ('326) do not disclose malic acid or tartaric acid as a crosslinking agent.

Smith et al discloses that citric, malic and tartaric acids are crosslinking agents for cellulosic fibers p 6, pars 71 and 74; pp 13-14, Tables 3 & 4).

The art of Hansen et al ('326), Cook et al, Smith et al and the instant invention is analogous as pertaining to the crosslinking of cellulosic fibers. The claimed polycarboxylic acids are all  $\alpha$ -hydroxy polycarboxylic acids and one of ordinary skill in the art would have expected them to function similarly. It would have been obvious to one of ordinary skill in the art to use any of the claimed acids as a crosslinking agent for

Art Unit: 1791

the fibers of Hansen et al ('326), with or without Cook et al, in view of Smith et al as well known and functionally equivalent options and have a reasonable expectation of success.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 6-8 and 10-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over (renumbered) claims 1-9 and 11-12 of copending Application No. 10/748977, as detailed in the previous Office Actions. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed fibers in the instant invention are obvious by the method claimed in the copending application (i.e.-by following the method in the copending application, a person with ordinary skill in the art would expect to make the claimed fibers). The claims of the copending application

Art Unit: 1791

recite crosslinking cellulosic fibers in the presence of a C<sub>4</sub> to C<sub>12</sub> polyol, the crosslinking agents and polyols being the same as those of the instant invention.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Halpern/  
Primary Examiner  
Art Unit 1791

/Dennis Cordray/

Application/Control Number: 10/748,930

Page 12

Art Unit: 1791

Examiner, Art Unit 1791